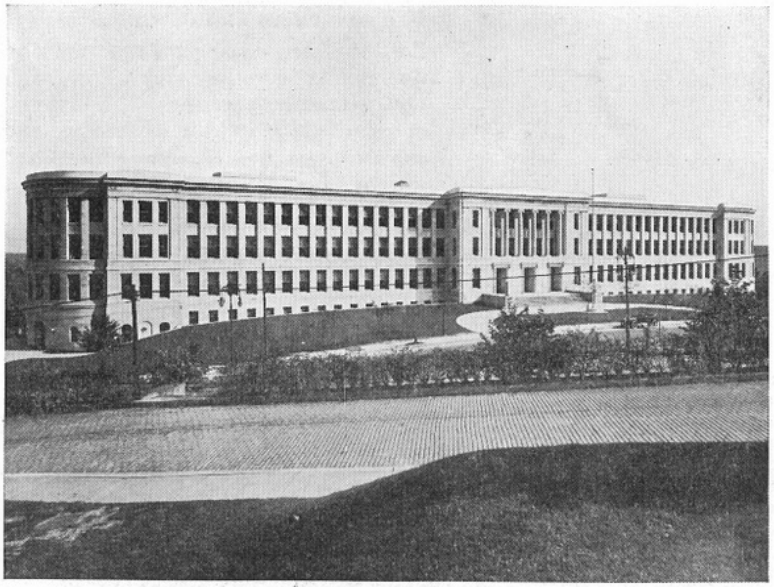
# CARRIER

## Type "A" Air Washer



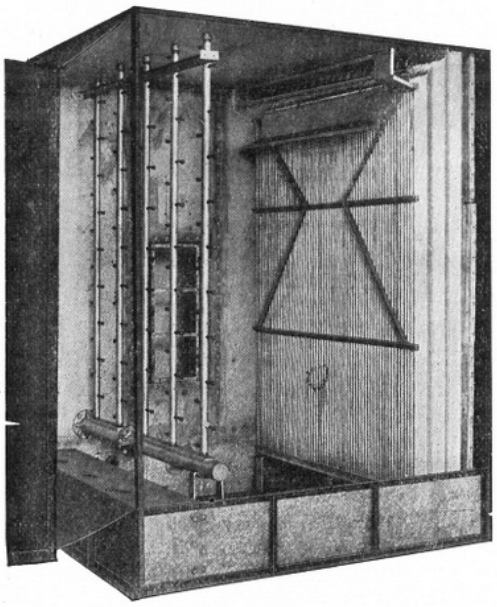
The Schenley High School, Pittsburgh, Pa.

For washing and cooling air in schools, hospitals, office buildings, hotels, factories and public buildings

**Carrier Air Conditioning Company**

OF AMERICA

**Buffalo, N. Y., U. S. A.**



## Air Washers

### General

An Air Washer consists essentially of Spray Chamber. a series of Nozzles and Eliminator Plates.

The air is drawn through the Spray Chamber where it comes in contact with a very minutely atomized spray of water.

A number of nozzles are used which are evenly spaced insuring a uniform distribution of the mist. The water is so finely divided that the air mixes intimately with it and all dust particles are thoroughly saturated. The air and water then pass through the Eliminators---a series of zig-zag plates, a portion of which are flooded by a continuous film of water. The air impinges on the flooded plates, leaving the dust and dirt which is washed down into the settling tank below. The clean air passes through the dry part of the eliminator which removes the entrained drops and leaves the washer containing exactly the moisture desired, depending on predermined conditions of temperature and humidity.

## Details Characteristic of Carrier Type "A" Washers

In comparing this machine with any competing standard washer on the market, it will be found that:

1st. It has the most effective type of spray nozzle which does not require flushing devices to prevent clogging.

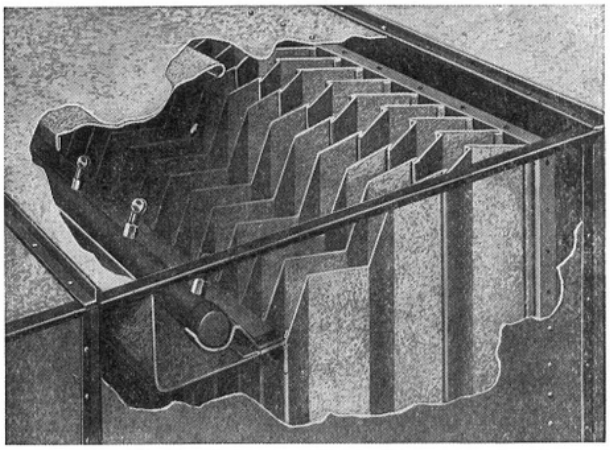
2nd. It has more than FOUR times the washing surface provided to remove the dust and dirt.

3rd. It has TWICE (or more) as many eliminators, breaking the air up into thin passages and bringing it into more intimate contact with the washing surface.

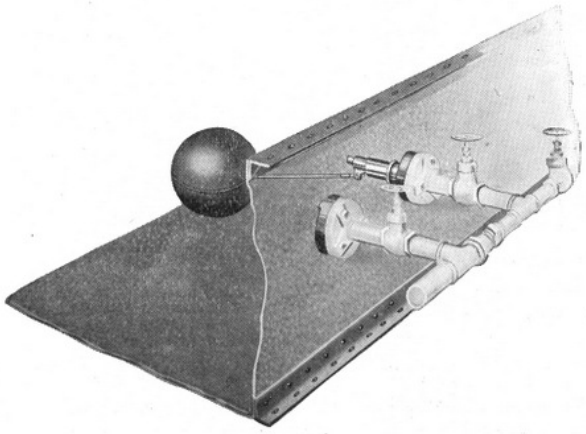
4th. It has eliminators which baffle the air through a SMALLER angle, giving a smaller resistance to passage of the air.

5th. It has eliminators made of one piece plates, reducing the number of exposed cut edges, requiring less space in the spray chamber and simplifying erection.

6th. It gives less resistance to the air than any other standard washer with the same velocity.



Eliminator Showing flooding nozzles



7th. It has ample WATER FILTERING surface and large orifice in nozzles to effectively prevent stoppage of spray system.

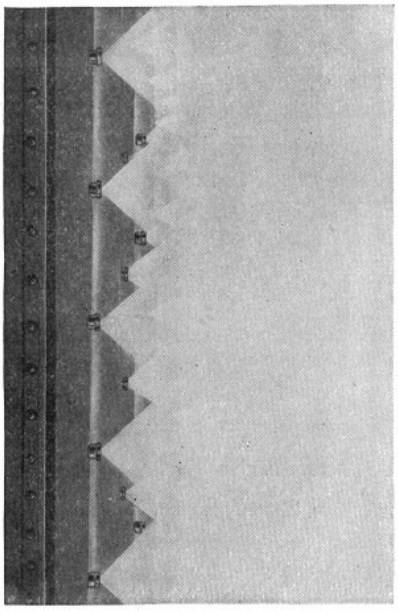
8th. The spray nozzles are placed 4 ft. in front of the eliminator, giving an ample spray chamber.

9th. The workmanship and material used are of the best. Every precaution is taken to make these machines the best washers and humidifiers built

## Settling Tank

The settling tank which extends under the entire washer, is 16 inches deep. It is made of galvanized iron and strongly riveted to an angle iron frame forming a rigid support for the entire washer. All seams are riveted and soldered. The tank is provided with an Automatic Float Valve for maintaining a constant water level and also a trapped Overflow and Drain, for connecting to the sewer.

## Spray Nozzle



The Carrier Spray Nozzle, though most effective, is very simple in construction. The water enters a small circular chamber tangentially, which gives it a whirling centrifugal action. The approach to the discharge opening is conical in shape, so the rotation, or whirling speed of the water, is greatly increased as it approaches the discharge. The effect of this arrangement is to give a most minutely divided or atomized spray, which offers an enormous amount of surface for washing and evaporation.

The construction of the nozzle is such as to make it very free from clogging with foreign material. The smallest hole is $\frac{3}{16}$ in diameter, yet it throws a perfectly atomized mist, by reason of the centrifugal principal upon which it operates.

We do not use the so-called self-cleaning or self-flushing nozzles, as there seems to be no more reason for letting dirt get into the spray piping system than would be the wisdom of allowing obstructions to get into your water supply system with flushing devices arranged with a hope of cleaning it out.

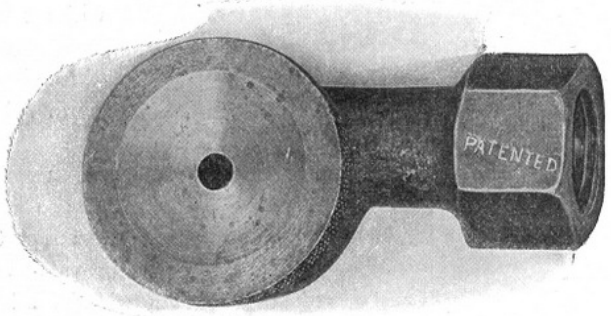
Our method is to thoroughly filter the water and effectively remove all dirt and foreign matter before it goes to the nozzle.

Compare the size of the orifice with the openings in the strainer screen below.

Dirt, in order to reach the nozzle, must first pass through the fine screen; the exact size of mesh used being shown

The area of orifice of the nozzle is eight times the area of each opening in screen; therefore there is not the least possible chance of stopping up the spray nozzles from dirt which passes through the strainer.

In order to provide against an excessive stoppage of the strainer, at least 12 sq. in. of strainer screen is provided for each and every nozzle used in a Carrier Washer, giving a strainer surface four hundred and forty times the area of the nozzle orifice.

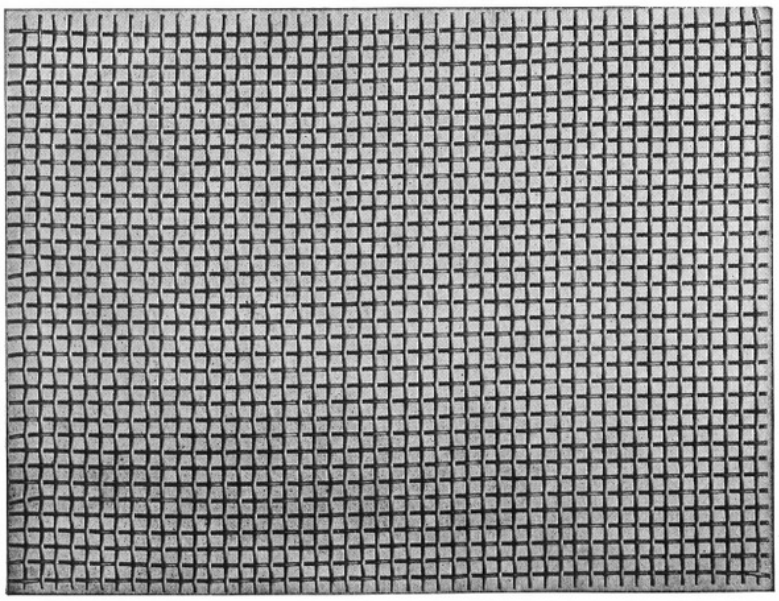



Exact Size of Nozzle used in all Standard Carrier Washers

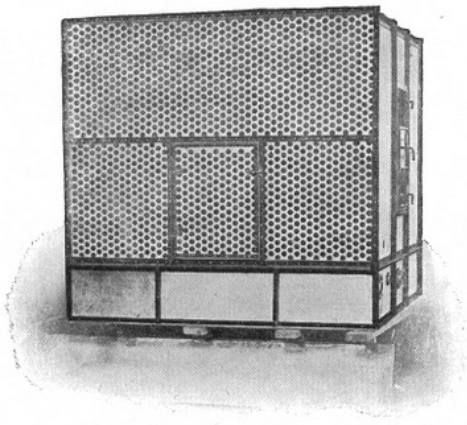
### Suction Strainer

The settling tank is divided into two compartments by a No. 12 mesh wire cloth strainer, through which the water passes before entering the suction of the pump. This strainer offers a surface of more than one square foot for each foot in width of the tank. The area of the strainer being many times the area of the suction pipe provides a thorough filtering of the water at a very low velocity.

Over the top of the compartment formed between the strainer and the end of the tank to which the suction of the pump is connected, is placed a cover to prevent any dirt from falling in as the air passes over it. The swinging lid is easily opened to allow for cleaning the strainer when the tank is being cleaned.



Suction Screen (Actual Size of Mesh)



## Distributing Plate

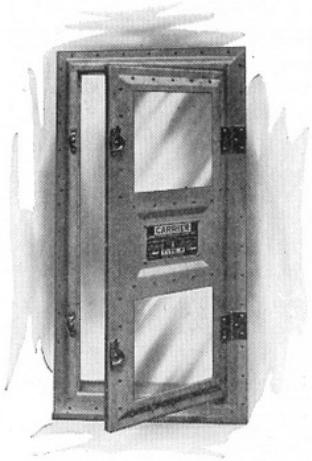
It is quite as necessary to distribute the air uniformly as it is the water.

Where the air enters the washer, a perforated plate is provided at the inlet to distribute the air and equalize the velocity through the spray chamber. This plate is made of the same material as the casing and is braced with angles bolted to the casing, and on large sizes is provided with a door.

The resistance to the air flow offered by this plate is very small and it effectively prevents eddy currents from throwing the spray back through the inlet end of washer.

## Inspection Door

The inspection door used in all Carrier Air Washers is a rigid serviceable device that remains water tight. It is of sufficient size to actually allow access for inspection and cleaning. This door and frame are both made of pressed steel sufficiently heavy to give strength and rigidity.

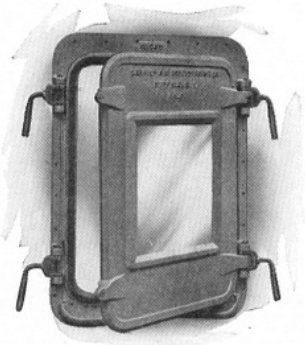


The door is held tight by means of locking devices which are easily operated. A tongue and groove construction prevents any water leakage without the use of rubber gaskets.

Where blow-through outfits are installed a cast iron door with rubber gaskets is provided.

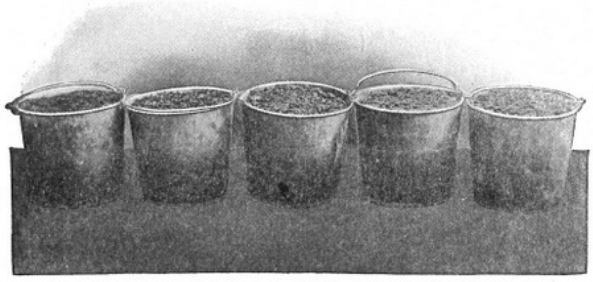
Each door carries two heavy 11″ x 12½″ glass panels on the larger sizes and one 14⅝″ x 8⅜″ on smaller washers.

A gutter is provided at bottom of frame to catch any water if a leak should develop.



## The Result

These pails contain dirt, mud, soot, bacteria of various sorts, and disease-breeding filth of all kinds. This muck was washed from the air used for ventilation of Public School No. 6, Brooklyn, New York, and shows the result of one week's run.



One pail per day from 9 a. m. until 4 p. m.

This mud was shoveled from the bottom of the washer settling tank after the water had been drained off. Of course all the finest dirt floating in the water had been carried off.

Had it been possible to have strained the water as it was drained, no doubt five more pails would have been filled. These pails each contained approximately twenty-five pounds of dry dust so this washer was collecting approximately one hundred and twenty-five pounds of dirt carrying disease every five days.

Form 12.4 8m 10-19 H. G.

SCANNED BY: AEM OF LOCKPORT NY USA

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NOTE: ORIGINAL DOCUMENT HAD WATER DAMAGE